# Aerator

## System Components

Media Vessel (qty) Size ..... (1) 13 x 54”
Media Vessel Construction ..... Fiberglass Wrapped Engineered Plastic
Empty Bed Volume ..... 3.59 $ft^3$
Riser Tube..... 1” ABS

## Inlet Water Quality

Pressure Range ..... 15 – 125 psi Dynamic Pressure
Temperature Range ..... 35 – 120$^o$ F
pH Range ..... 6.0 – 10.0 SU

## Operating Specs

Flow Range ..... 5.0 - 8.0 gpm
Dimensions (width x depth x height) ..... 13 x 13 x 54”
Weight (Operating / Shipping)..... 350 / 120 lbs

## Connections

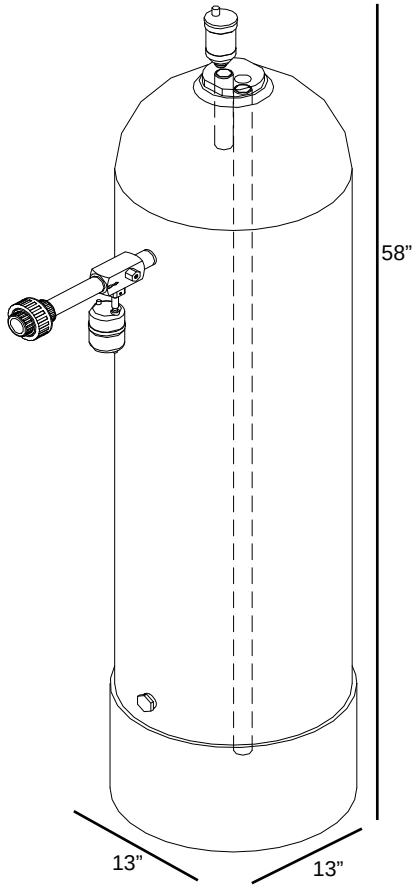
Inlet Connection ..... 1” Union
Outlet Connection ..... 1 FNPT
Power ..... None

## System Part Numbers

Aerator ..... 6789

**Air Pump Options**

Air Pump 115 V with Kit ..... 8054
Air Pump 230 V with Kit ..... 8055
Air Pump 115 V with Shelf Kit ..... 8063
Air Pump 230 V with Shelf Kit ..... 8064




## Operating Profile

System shall be used for the oxidation of iron, manganese and hydrogen sulfide. As water flows through the injector body, a portion of the stream is directed through a venturi system, allowing air to be drawn in by the vacuum created by the flowing water. This mixing promotes oxidation of iron, manganese and hydrogen sulfide.

## Contact Tank

The contact tank shall be designed for a maximum working pressure of 125 psi and hydrostatically tested at 300 psi. Tanks shall be made of polyethylene and reinforced with a fiberglass wrapping. Each tank shall include a 4.0 in. threaded top opening. Each tank shall be NSF approved.

**revision date: June 2008**

# Aerator

## Concept
The CWS Aerator is one method for removal of iron, manganese and hydrogen sulphide. Air is introduced into the water stream, promoting oxidation. Oxidation converts soluble iron and manganese to insoluble compounds, which precipitate out and collect in the bottom of the tank and/or are removed by an appropriate filter downstream.

## Application
The CWS Aerator uses a 13" x 54" tank with a special top closure to hold a vent pipe and service flow riser tube. In high flow rate applications, it may be necessary to use multiple units in parallel. The maximum flow rate supported is 8 gpm for each Aerator.

There are two methods available for putting air into the system: 1) a venturi, where air is drawn in by passing the water through a venturi, or 2) an air pump where air is forced into the water stream.

The venturi requires a minimum pump flow rate of 5 gpm and should not be used with a jet pump (a jet pump usually pumps below 5 gpm). An air pump has no limits on flow rate from the well pump and may be used with jet pumps.

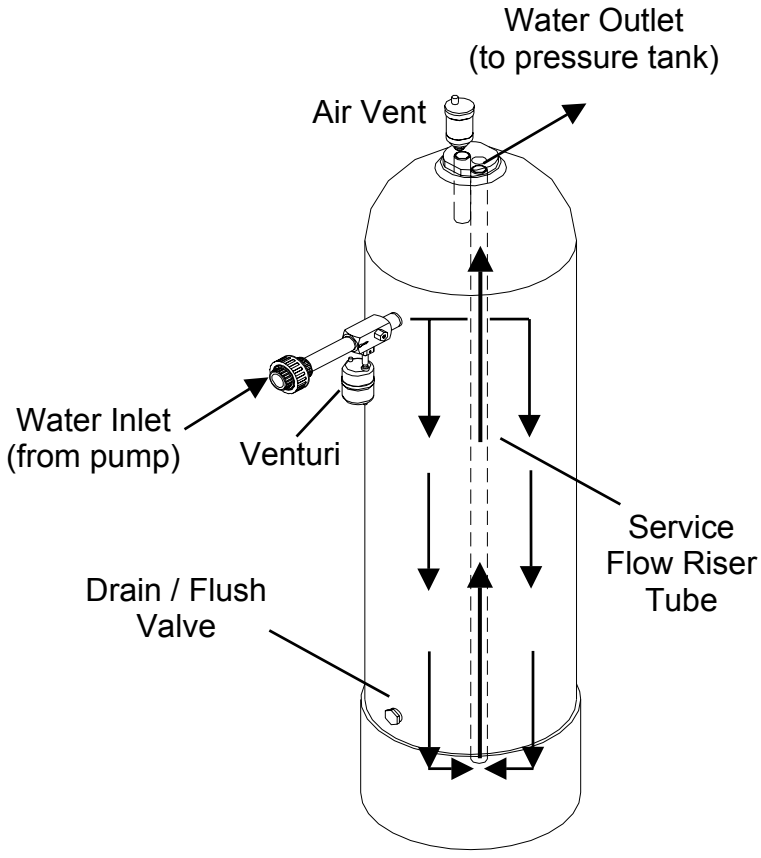
It is recommended that a drain/flush valve be installed at the bottom of the reactor tank to periodically allow the flushing of precipitated particles.

## Operation
Water enters the reaction tank through the water inlet.

As water is pumped into the reaction tank, air is mixed with the water stream by the venturi. Oxidation occurs in the reaction tank, and insoluble oxidised compounds precipitate out.

The air vent has two purposes: 1) to vent excess air and hydrogen sulphide gas, and 2) to allow an air pocket at the top of the tank to help with the oxidation process.

Water is drawn up through the service flow riser tube and out through the water outlet.




**Aerator Flow Path**

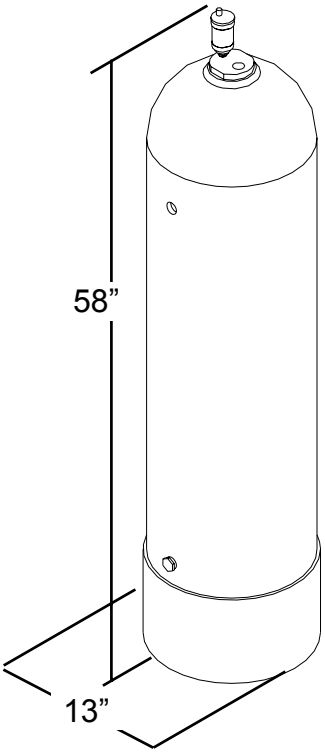
# Aerator

## Specifications

| | |
|---|---|
| Tank Size (inches)* | 13” x 54” |
| Overall Height (inches) | 58 |
| Minimum Flow Rate (gpm) † | 5 |
| Recommended Flow Rate (gpm) † | 8 |

* Diameter x Height

† Minimum flow rates are specified for use with a DEMA Valve. If flow rates are lower, an air pump should be used.



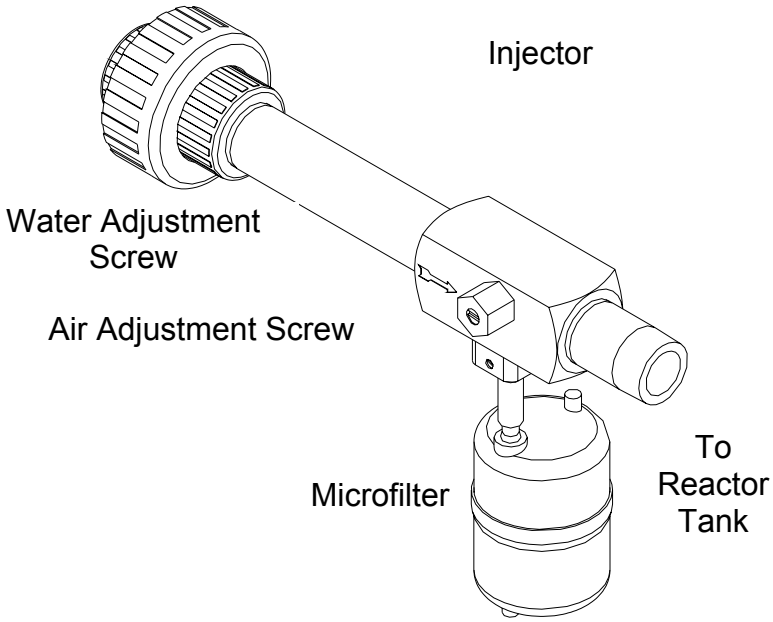

## Service Notes

- Install between pump and pressure tank.
- DEMA valve ***must not*** be used with a jet pump. Minimum flow rate for use with DEMA valve is 5 gpm (recommended is 8 gpm).
- Adjust DEMA Valve to draw air for a minimum of 25% of the pump cycle.

# DEMA Valve

## Concept

The DEMA Valve is used on aeration systems to mix air with an incoming stream of water. As water flows through the injector body, a portion of the stream is directed through a venturi system allowing air to be drawn in by the vacuum created by the flowing water.




## Application

Water flow is required to draw air into the venturi; thus, air is introduced into the reactor tank only while the pump is running. To work properly, this valve requires a minimum pump flow rate of 5 gpm (8 gpm recommended). This valve is not recommended for use with jet pumps.

## Calculating Pump Rate

To determine whether the pump rate is adequate for a DEMA Valve installation, perform the following test:

1. Open a tap and let the water run until the pump turns on. Shut off tap. Allow the tank to fill. The pump will shut off when the tank is full.
2. Draw water from the pressure tank, measuring it, until the pump turns on. Stop drawing water. (Draw Down)
3. When the pump turns on, measure the time that the pump runs until it shuts off again. (Refill Time)

The pump rate can then be calculated as follows:

Pump Rate (gallons per minute) = [Draw Down (gallons) / Refill Time (seconds)] x 60

Draw Down = the gallons of water drawn from the pressure tank to turn the pump on (Step 2 above).
Refill Time = the amount of time, in seconds, from when the pump turns on until the pump turns off (Step 3 above).

**Example**:

Draw down = 8.5 gallons
Refill time = 45 seconds
Pump Rate = [8.5 gallons / 45 seconds] x 60 = 11.3 gpm

# Air Pump

## Concept

The air pump is an alternate way to feed air into an Aeration System. Rather than drawing air in via a venturi effect, the pump creates positive pressure to force air into the water stream from the well pump as it passes into the reactor tank.

## Application

It is important to have the correct voltage for the air pump (115 VAC or 230 VAC) in choosing the proper air pump model.

When installing the air pump, follow local plumbing and electrical codes. Electrical installation should be done only by qualified personnel. The installation sheet can be found in the box.

| Description | Part Number |
|---|---|
| Air Pump 115V with Kit | 8054 |
| Air Pump 230V with Kit | 8055 |
| Air Pump 115V with Shelf Kit | 8063 |
| Air Pump 230V with Shelf Kit | 8064 |